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From: Commander, Western Division, Naval Facilities Engineering Command
To: Distribution

Subj: PROPOSED REVISIONS TO THE SAMPLING PLAN FOR PHASED 2B AND 3 OF THE RI/FS AT NAVAL AIR STATION, ALAMEDA

This letter presents proposed modifications to the sampling plan for Phases 2B and 3 of the Remedial Investigation/Feasibility Study (RI/FS) at Naval Air Station (NAS) Alameda. These modifications apply only to the number of geotechnical and feasibility study samples to be collected.

These proposed modifications reflect a decrease in the number of geotechnical samples when compared to the February 15, 1991 Work Plan prepared by PRC Environmental Management (PRC) and James M. Montgomery Consulting Engineers (JMM). The PRC/JMM work plan was based on the initial interpretation of Canonie Environmental's (Canonie) February 1990 Sampling Plan. Upon re-examination of the Canonie plan, it appears that the number of geotechnical samples proposed in the PRC/JMM work plan exceeds the number of samples originally proposed by Canonie. In addition, the usefulness of data to be derived from the feasibility study samples was evaluated and found to be of limited use. Therefore, a reduction in the numbers of some analyses and the elimination of others is proposed here. This reduction would eliminate a large number of repetitive and/or unnecessary geotechnical and feasibility study analyses yet will fulfill the purpose of the investigation and provide the data required for the FS portion of the project.

Proposed Sampling Plan - Geotechnical Samples

The proposed number of samples for geotechnical analyses are summarized in Table 1. Details regarding the revised geotechnical sample collection plan are described below.

Atterberg Limits. Atterberg Limits samples will be collected from within fine-grained soil units. These analyses provide necessary information for soil classification and serve as a general predictor of consolidation coefficients. A total of 15 samples will be collected.

Cation Exchange Capacity (CEC). CEC results will be used in evaluation of fate-transport modeling and, thus, will be collected from within water-bearing zones. A total of 30 samples will be collected. This number of samples will enable a statistical analysis of the results.

Consolidation. Consolidation tests have been eliminated. Consolidation information is useful in evaluating settlement potential of an area if capping is a feasible remedial alternative. Capping is not considered a potentially feasible alternative for sites included in Phases 2B and 3.

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Gradation. Sieve analysis samples will be collected from units representative of the entire stratigraphic column identified in the investigation. These analyses will be used to confirm field soil classifications and to provide data on the lateral variability of the individual units. A minimum of one sample will be collected from each stratigraphic unit identified at each site (approximately 32 samples).

Moisture Content/Density. Samples for moisture content/density will be collected from within aquifer units. This information will be used in evaluating the porosity of water-bearing units. A total of 35 samples will be collected.

Specific Gravity. Specific gravity information will be used in conjunction with moisture content/density information in evaluation the porosity of waterbearing units. A total of 13 samples will be collected.

Permeability. Permeability measurements on surface soil samples (0 to 6 inches depth) have been eliminated. Information gained from this test would not aid in evaluation of remedial alternatives. However, permeability analyses will be performed on subsurface samples collected from the capillary fringe, within water-bearing units, or within units identified as potential aquitards. Results of these analyses will be used in vadose zone characterization, to evaluate aquifer characteristics, and to evaluate the effectiveness of aquitard units in restricting the downward migration of contaminants. A total of 35 samples will be collected.

Total Organic Carbon (TOC). TOC results will be used in fate-transport modeling. A total of 40 samples will be collected. The samples collected at each site will be selected from either immediately above the water table, adjacent to the bottom of industrial sewer lines targeted for investigation, or from native soils below the sewer lines.

Proposed Sampling Plan - Feasibility Study Samples.

Feasibility study samples will be collected at sites where contamination by fuel hydrocarbons potentially exists (Sites 7A, 7B, 12, and 15). Details regarding the number and types of feasibility study samples to be collected are described below.

Ash Content. Ash content analyses will aid in evaluating incineration of contaminated soils as a remedial alternative. Samples will be collected at Sites 7A, 7B, 12 , and 15 from units determined in the field to contain petroleum hydrocarbon contamination. The samples will be composited at the laboratory prior to analysis. All samples from an individual site that were collected from a common depth interval will be composited (i, all samples from 5 feet, etc.). A minimum of three composite samples will be analyzed from each site.

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British Thermal Units (BTU). Samples for BTU analysis will be retained for potential future use if incineration is determined to be a feasible remedial alternative. Soil samples retained for possible future analysis will be selected from units judged in the field to be representative of contaminated material present at the site. If no hydrocarbon vapors are detected by field monitoring, samples will be retained from boreholes located adjacent to potential sources (former or current tank locations, pipelines, etc.).

BTU samples will be held until the feasibility study portion of the investigation is complete. If incineration is determined to be a feasible remedial alternative and is accepted by the DHS, the samples will be analyzed. A maximum of 12 BTU samples may be analyzed. The results will be used in determining the potential for a credit from the incineration subcontractor.

Chlorine Content. Analyses for chlorine content have been eliminated. Chemical analyses of soil samples will provide an indication of the nature and quality of specific chlorinated compounds present in site soils. Further analyses for chlorine content would replicate these results and are not necessary.

Nutrients. Nutrient analyses are useful for evaluating the feasibility of bioremediation as a remedial alternative. Samples will be collected and composited as described above for ash content analyses. A total of 12 samples (3 composite samples per site) will be analyzed.

The field program for Phases 2B and 3 is currently underway. While review and approval of these proposed changes if pending, field personnel are collecting samples based on the PRC/JMM work plan previously approved by the DHS.

Please provide your comments regarding the proposed modifications by July 26, 1991. Should you have any questions regarding this matter, the point of contact is Commander, Western Division, Naval Facilities Engineering Command (Attn: Mr. Wing Wong, Code 1811WW at Commercial (415) 244-2537).

Original signed by:
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Head, Installation Restoration Section

Encl:
(1) Table 1 - Proposed Geotechnical Sampling Program

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Distribution:
Environmental Protection Agency, Region IX (Attn: Julie Anderson)
California Department of Health Services (Attn: Eileen Hughes)
California Regional Water Quality Control Board (Attn: Lester Feldman)
Bay Area Air Quality Management District (Attn: Scott Lutz/Brian Jennison)
U.S. Fish & Wildlife Services (Attn: Don Palawski)
California Department of Fish and Game (Attn: Mike Rugg)
National Oceanic & Atmospheric Administration (Attn:Chip Demarest)
U.S. Army Corps of Engineers (Attn: Sharon Morlund)
Bay Conservation and Development Commission (Attn: Chris Perry/Richard Cooper)

Blind copy to:
PRC Environmental Management, Inc. (Attn: Kirk Switzer)
James Montgomery Engineers (Attn: Steve Newton)
NAS Alameda (Attn: Randy Cate)

Blind copy to: 1813, 1813EG, 1911WW, Admin Record
WRITER: W. Wong, 1811WW, x2537
TYPIST; M. Marshall,28 Jun 91, RI/FS Sampling Plan WW
FILE: ALAMEDA/NAS

Enclosure (1)

TABLE 1
PROPOSED GEOTECHNICAL SAMPLING PROGRAM

PARAMETER	Site 5	Site 6	Site 7A	Site 7B	Site 8	Site 10	Site 11	Site 12	Site 14	Site 15	Total	Total Previously Proposed by JMM/PRC	Total Previously Proposed by Canonie
GEOTECHNICAL SAMPLES													
Atterberg Limits	6	3							3	3	15	28	0
Cation Exchange Capacity	3	3	3	3	3	3	3	3	3	3	30	30	6
Consolidation	0	0	0	0	0	0	0	0	0	0	0	0	9
Gradation	6	3	3	3	5	1	3	4	2	2	32	146	80
Moisture Content/Density	6	3	5	3	2	2	5	3	3	3	35	112	37
Specific Gravity	3	1	2	1	1	1	1	1	1	1	13	19	15
Permeability	6	3	5	3	2	2	5	3	3	3	35	62	92
Total Organic Carbon	6	3	6	6	3	3	4	3	3	3	40	103	37
FEASIBILITY STUDY SAMPLES													
Ash Content			3	3				3		3	12	18	16
BTU			3	3				3		3	12	18	16
Chlorine Content			0	0				0		0	0	18	16
Nutrients			3	3				3		3	12	14	16

Note: Number of samples includes all duplicate samples.
Ash Content and Nutrient samples are composites.
British Thermal Unit (BTU) samples are composites to be held until FS portion of project complete.